Patent Application of

James Nordstrom

for

TITLE: METHOD AND SYSTEM FOR CHILDREN TO SAFELY SEND AND RECEIVE ELECTRONIC MAIL

TECHNICAL FIELD

[0001] This present invention relates to a computer method and system for protecting children and more particularly to a method and system for protecting children while sending and receiving electronic mail.

BACKGROUND OF THE INVENTION

[0002] Electronic mail is an electronic messaging system which enables individuals to send electronic mail messages to one another using computing devices which are interconnected via a communications network, the most popular communications network is the Internet.

[0003] Every individual sending or receiving electronic mail messages must have at least one electronic mail account. Each electronic mail account has an

associated unique electronic mail address which differentiates the electronic mail account from other electronic mail accounts.

[0004] An electronic mail address, takes the form of name@domain where name is the username of an individual with an electronic mail account and domain is the address of a computer or group of computers connected to a computer network which provide electronic mail services. Electronic mail services consist of retrieving, receiving, sending, storing, sorting and forwarding electronic mail messages. An electronic mail address is similar to a postal address as it defines a unique location to which an electronic mail message should be delivered.

[0005] Electronic mail accounts are hosted on electronic mail servers. To check for new electronic mail messages, review existing electronic mail messages or compose a new electronic mail message, an individual uses a Standard Electronic Mail Client or a Web Based Electronic Mail Client. A Standard Electronic Mail Client is any software executing on a computing device which can send, store and retrieve electronic mail messages over a communications network using industry standard electronic mail protocols. Examples of Standard Electronic Mail Client computing devices are computer servers, computer

desktops, computer laptops, tablet PCs, computer notebooks, Personal Digital Assistances (PDAs), Pocket PCs (PPC), cellular/mobile/GSM and other phone technologies. A Web Based Electronic Mail Client is an electronic mail client which uses a Web Browser, HTTP and/or HTTPS protocols, a Web Server and in some cases an Application Server or other server components as an interface or wrapper to a Standard Electronic Mail Client.

[0006] The body or content of an electronic mail message can consist of text, HTML, images, audio, video and flash animations.

[0007] Electronic mail was created in the nineteen seventies. In the early nineteen nineties the Internet went main stream and electronic mail became a popular communications medium. Billions of electronic mail messages are sent and received daily.

[0008] While the early adapters of the Internet were mostly adults, the increased simplicity of computers and a growing number of Internet connectivity options have brought large numbers of children online. As of today, it is estimated that 45 million American children are connected to and actively using the Internet.

[0009] With a growing number of children comes a growing number of individuals who wish to harm these children. These individuals use the anonymity of the Internet to disguise their identity. Some even pose as children in an effort to gain a child's trust.

[0010] Electronic mail was designed as an open communication system. As such, any electronic mail message send by anyone from anywhere is delivered to the electronic mail message's addressee, regardless of the content of the electronic mail message or the age of the addressee.

[0011] While an open environment is acceptable to adults it is not suitable for children.

[0012] An open environment does not prevent inappropriate, sexually explicit and dangerous electronic mail messages from being delivered directly to a child's electronic mail account.

[0013] To address the issue of inappropriate, sexually explicit and dangerous electronic mail messages, computer based electronic mail filters were created.

Computer based electronic mail filters use a technology called pattern matching; these filters match predefined key words or a set of pre defined words. Each electronic mail message is screened for a matching word or set of words. If a match is discovered, the electronic mail message is deleted.

[0014] The problem with electronic mail filters is that they are computer based and while electronic mail filters offer an improvement over an open electronic mail system, electronic mail filters fail to filter all messages.

[0015] Advertisers and spammers, individuals who deliberately send bulk unsolicited electronic mail messages, have developed clever ways to defeat electronic mail filters. For example advertisers and spammers deliberately change the spelling of a word, use words with dual meaning or insert random characters into a word. As a result these electronic mail messages will pass the electronic mail filter check and be delivered directly to a child's account.

[0016] More importantly being key word based, computer based electronic mail filters fail to filter intent, electronic mail messages that do not match a key word or group of words, but still pose a threat to children. Electronic mail messages sent from older peers can contain discussions of sexually, drug use, depression,

suicide and violence. Electronic mail messages sent from pedophiles and other dangerous individuals can be used to establish contact with a child.

SUMMARY OF THE INVENTION

[0017] An embodiment of the present invention provides a method and system for children to safely send and receive electronic mail. When an individual or system sends an electronic mail message addressed to a child, the electronic mail message is intercepted and redirected to the electronic mail account of the child's parent. If the parent deems the electronic mail message appropriate and explicitly forwards the electronic mail message from their electronic mail account to the child's electronic mail account, then, and only then, will the electronic mail message become visible to the child. If the parent deems the electronic mail message inappropriate, the parent can delete the electronic mail message, in turn preventing the child from receiving the electronic mail message. When a child sends an electronic mail message, the electronic mail message is intercepted and redirected to the electronic mail account of the child's parent and not to the intended addressees' electronic mail accounts. Once the parent reviews and deems the electronic mail message appropriate, the parent can

forward the electronic mail message from their account to the electronic mail message's original addressees. If the parent deems the electronic mail message inappropriate, the parent can delete the electronic mail message, preventing the intended recipient from receiving the electronic mail message. To control the flow of electronic mail messages sent to and from a child, a parent using a Web Browser, logs into the system's Web Server, selects an electronic mail account belonging to one of their children and selectivity forwards or deletes incoming and outgoing electronic mail messages. Children use a custom Web Based Electronic Mail Client, a Standard Electronic Mail Client or any computing device which is capable of sending and receiving electronic mail messages. The interception, temporary storage and forwarding of electronic mail messages are transparent to both the sender and receiver of an electronic mail message.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] FIG. **1** is a block diagram illustrating one embodiment of the present invention.

[0019] FIG. **2** is a flow diagram of a routine which enables a child to send an electronic mail message via a Web Based Electronic Mail Client.

[0020] FIG. **3** is a flow diagram of a routine which processes an electronic mail message sent from a child via a Web Based Electronic Mail Client.

[0021] FIG. **4** is a flow diagram of a routine which enables a child to send an electronic mail message via a Standard Electronic Mail Client.

[0022] FIG. **5** is a flow diagram of a routine which processes an electronic mail message sent from a child via a Standard Electronic Mail Client.

[0023] FIG. **6** is a flow diagram of a routine which enables an individual to send an electronic mail message to a child.

[0024] FIG. **7** is a flow diagram of a routine which processes an electronic mail message sent to a child.

[0025] FIG. **8** is a flow diagram of a routine which enables a child to view new electronic mail messages.

[0026] FIG. **9** is a flow diagram of a routine which processes a child request to view new electronic mail messages.

[0027] FIG. **10** is a flow diagram of a routine which enables a parent to view new electronic mail messages.

[0028] FIG. **11** is a flow diagram of a routine which processes a parent request to view new electronic mail messages.

[0029] FIG. **12** is a flow diagram of a routine which enables a parent to forward one or more electronic mail messages to a child's account.

[0030] FIG. **13** is a flow diagram of a routine which processes a parent request to forward one or more electronic mail messages to a child's account.

[0031] FIG. **14** is a flow diagram of a routine which enables a parent to delete one or more electronic mail messages.

[0032] FIG. **15** is a flow diagram of a routine which processes a parent's request to delete one or more electronic mail messages.

[0033] FIG. **16** is a flow diagram of a routine which enables a parent to forward one or more electronic mail messages to the messages addressees.

[0034] FIG. **17** is a flow diagram of a routine which processes a parent's request to forward one or more electronic mail messages to the messages addressees.

[0035] FIG. **18** is a flow diagram of a routine which enables a parent to forward one or more electronic mail messages to an authority.

[0036] FIG. **19** is a flow diagram of a routine which processes a parent's request to forward one or more electronic mail messages to an authority.

[0037] FIGS. **20A – 20C** illustrate a hierarchical data entry mechanism in one embodiment.

DETAILED DESCRIPTION OF THE INVENTION

[0038] The present invention provides a method and system for children to safely send and receive electronic mail. Figures 1 through 20 illustrate one embodiment of the present Invention.

[0039] FIG. **1** is a block diagram illustrating one embodiment of the present invention. This embodiment supports a child safely sending and receiving electronic mail messages over a communications network. A child on his/her computing device **34,** using a Web Based Electronic Mail Client **36,** composes and sends an electronic mail message via a communications network **42** to the Web Server **56** the Web Server **56** forwards the request which encompasses the electronic mail message to the Application Server **48** via a communications network **46.** The Application Server **48** deposits the electronic mail message into the Electronic Mail Database **52** via a communications network **50.** A child on his/her computing device **34** using a Standard Electronic Mail Client **38** composes and sends an electronic mail message. The Standard Electronic Mail Client **38** sends the electronic mail message to the system's Electronic Mail Server **60** via a computer network **44.** The system's Electronic Mail Server **60** uses a Maillet **62** to inspect the electronic mail message for a "Parent Approved" indicator. If a "Parent Approved" indicator is found within the electronic mail

message, the Maillet **62** forwards the electronic mail message to one or more electronic mail servers for which the electronic mail message is addressed. If the "Parent Approved" indicator is not found within the electronic mail message the Maillet **62** deposits the electronic mail message into the Electronic Mail Database **52** via a communications network **64.** An individual or computer system sends an electronic mail message addressed to a child. The system's Electronic Mail Server **60** using a Maillet **62** inspects the electronic mail message for a "Parent Approved" indicator. If a "Parent Approved" indicator is found within the electronic mail message, the Maillet **62** forwards the electronic mail message to the child's electronic mail account. If the "Parent Approved" indicator is not found within the electronic mail message the Maillet **62** deposits the electronic mail message into the Electronic Mail Database **52** via a communications network **64.** A parent on his/her computing device **30** using a Web Browser **32** connects to the Web Server **56** via a communications network **40.** The Web Server **56** forwards the request to the Application Server **48** via a communications network **46.** The Application Server **48** queries the Electronic Mail Database **52** via a communications network **50** for electronic mail messages that require review. The Electronic Mail Database **52** returns a list of electronic mail messages to the Application Server **48** via a communications network **50.** The Application Server **48** returns the list of electronic mail messages to the Web Server **56** via a

communications network **46.** The Web Server **56** returns the list of electronic mail messages to the parent's Web Browser **32**, as a web page for display, via a communications network **40**. The parent reviews the list of electronic mail messages, selecting one or more electronic mail messages that require action. If the parent's request includes an instruction to forward the selected electronic mail messages, each electronic mail message is marked "Parent Approved" and using the JavaMail API **54** the electronic mail messages are sent to the Electronic Mail Server **60** via a communications network **58** for delivery. If the parent's request includes an instruction to delete the selected electronic mail messages, the Application Server **48** instructs the Electronic Mail Database **52** to delete the selected Electronic mail messages. The Electronic Mail Database **52** deletes the electronic mail messages.

[0040] FIG. **2** is a flow diagram of a routine which enables a child to send an electronic mail message via a Web Based Electronic Mail Client. Using a Web Browser **36** a child composes a new electronic mail message **66,** clicks on the send button **68** and receives a confirmation page **70**.

[0041] FIG. **3** is a flow diagram of a routine which processes a child's request to send an electronic mail message via a Web Based Electronic Mail Client. In response to the child's request, the child's Web Browser **36** sends a request to the Web Server **56.** The Web Server **56** forwards the request to the Application

Server **48** and the Application Server **48** deposits **72** the electronic mail message into the Electronic Mail Database **52**. The Application Server **48** generates and returns a confirmation page to the Web Server **56.** The Web Server **56** returns a confirmation page **74** to the child's Web Browser **36**.

[0042] FIG. **4** is a flow diagram of a routine which enables a child to send an electronic mail message via a Standard Electronic Mail Client **38**. Using a Standard Electronic Mail Client **38** a child composes a new electronic mail message **76,** clicks the send button **78** and received a message sent confirmation page **80**.

[0043] FIG. **5** is a flow diagram of a routine which processes a child's request to send an electronic mail message via a Standard Electronic Mail Client **38**. When a child clicks on the send button of a Standard Electronic Mail Client **38,** the Standard Electronic Mail Client **38** sends the electronic mail message to the Electronic Mail Server **60**. A Maillet **62** on the Electronic Mail Server **60** intercepts and interrogates the electronic mail message for a "Parent Approved" indicator **82**. If a "Parent Approved" indicator is found within the electronic mail message, the electronic mail message is forwarded to the electronic mail message's addressees **84.** If a "Parent Approved" indicator is not found within the electronic mail message the electronic mail message is deposited **86** into the Electronic Mail Database **60.**

[0044] FIG. **6** is a flow diagram of a routine which enables an individual to send an electronic mail message to a child. Using a Web Based Electronic Mail Client, a Standard Electronic Mail Client or any computing device which is capable of sending electronic mail messages, an individual composes a new electronic mail message **88,** clicks on a send button **90** and receives an electronic mail message sent confirmation **92.**

[0045] FIG. **7** is a flow diagram of a routine which processes an individual's or computer system's request to send an electronic mail message to a child. When a computer system or individual sends an electronic mail message addressed to a child, the electronic mail message is delivered to the system's Electronic Mail Server **60**. The Maillet **62** on the Electronic Mail Server **60** intercepts and interrogates the electronic mail message for a "Parent Approved" indicator **94**. If a "Parent Approved" indicator is found within the electronic mail message, the electronic mail message is forwarded to the child's account **96.** If a "Parent Approved" indicator is not found within the electronic mail message, the electronic mail message is deposited into the Electronic Mail Database **98.**

[0046] FIG. **8** is a flow diagram of a routine which enables a child to query their account for new or existing electronic mail messages. Using a Web based Electronic Mail Client **36** or a Standard Electronic Mail Client **38** a child queries

system for a list of new or existing electronic mail messages **100.** The system returns a list of new or existing electronic mail messages **102.**

[0047] FIG. **9** is a flow diagram of a routine which processes a child's request for a list of new or existing electronic mail messages. If the child is using a Standard Electronic Mail Client **38**, the child's Standard Electronic Mail Client **38** queries the Electronic Mail Server **60** for a list of new or existing electronic mail messages **104**. The Electronic Mail Server **60** returns a list of new or existing electronic mail messages **106**. If the child is using a Web Based Electronic Mail Client, the child's Web Browser **36** queries the Web Server **56** for a list of new or existing electronic mail messages **104.** The Web Server **56** forwards the request to the Application Server **48**. The Application Server **48** queries the Electronic Mail Server **60** for new or existing electronic mail messages. The Application Server **48** returns the list of new or existing electronic mail messages to the Web Server **56** and in turn the Web Server **56** returns the list of new or existing electronic mail messages **106** to the child's Web Browser **36**.

[0048] FIG. **10** is a flow diagram of a routine which enables a parent to view a list of electronic mail messages which had previously been stored in the Electronic Mail Database **52**. Using a Web Browser **32** a parent selects a child's account to review from a list of children for which they are responsible **108.** The system returns a list of electronic mail messages **110** for that child.

[0049] FIG. **11** is a flow diagram of a routine which processes a parent's request to view a list of electronic mail messages which had previously been stored in the Electronic Mail Database **52**. In response to the parent's request for the list of electronic mail messages the parent's Web Browser **32** sends a request to the Web Server **56.** The Web Server **56** forwards the request to the Application Server **48.** The Application Server **48** queries the Electronic Mail Database **52** for a list of electronic mail messages **112**. The Electronic Mail Database **52** returns a list of electronic mail messages to the Application Server **48** and in turn the Application Server **48** returns the list of electronic mail messages to the Web Server **56.** The Web Server returns the list of electronic mail messages **114** to the parent's Web Browser **32**.

[0050] FIG. **12** is a flow diagram of a routine which enables a parent to forward one or more electronic mail messages from the Electronic Mail Database **52** to a child's account. A parent selects one or more electronic mail messages from a list of electronic mail messages to forward **116,** clicks the forward button **118** and receives a confirmation page **120.**

[0051] FIG. **13** is a flow diagram of a routine which processes a parent's request to forward one or more electronic mail messages from the Electronic Mail Database **52** to a child's account. In response to the parent's request, the parent's Web Browser **32** sends a request to the Web Server **56.** The Web

Server **56** forwards the request to the Application Server **48.** The Application Server **48** reads the requested electronic mail messages from the Electronic Mail Database **52** and the Application Server **48** marks each message "Parent Approved" using the JavaMail API **54.** The Application Server **48** forwards a copy of the electronic mail messages to the Electronic Mail Server **60.** The Electronic Mail Server **60** inspects the electronic mail messages, locates the "Parent Approved" indicator and forwards the electronic mail messages to the child's electronic mail account **122.** The Application Server **48** generates and returns a confirmation page to the Web Server **56.** The Web Server **56** returns the confirmation page **124** to the parent's Web Browser **32**.

[0052] FIG. **14** is a flow diagram of a routine which enables a parent to delete one or more electronic mail messages from a list of electronic mail messages. A parent selects one or more electronic mail messages **126,** clicks the delete button **128** and receives a confirmation page **130**.

[0053] FIG. **15** is a flow diagram of a routine which processes a parent's request to delete one or more electronic mail messages from the Electronic Mail Database **52**. In response to the parent's request, the parent's Web Browser **32** sends a request to the Web Server **56.** The Web Server **56** forwards the request to the Application Server **48** and the Application Server **48** instructs the Electronic Mail Database **52** to delete the selected electronic mail messages **132.**

The Application Server **48** generates and returns a confirmation page to the Web Server **56.** The Web Server **56** returns the confirmation page **134** to the parent's Web Browser **32.**

[0054] FIG. **16** is a flow diagram of a routine which enables a parent to forward one or more electronic mail messages to the messages addressees. A parent selects one or more electronic mail messages from a list of electronic mail messages **136,** clicks the forward button **138** and receives a confirmation page **140.**

[0055] FIG. **17** is a flow diagram of a routine which processes a parent's request to forward one or more electronic mail messages from the Electronic Mail Database **52** to the electronic mail messages addresses. In response to the parent's request, the parent's Web Browser **32** sends a request to the Web Server **56.** The Web Server **56** forwards the request to the Application Server **48.** The Application Server **48** reads the electronic mail messages from the Electronic Mail Database **52** and the Application Server **48** marks each message "Parent Approved" **142**. The Application Server **48**, using the JavaMail API **54**, forwards a copy of each of the electronic mail messages **144** to the Electronic Mail Server **60.** The Electronic Mail Server **60**, using the Maillet **62,** inspects the electronic mail messages, locates the "Parent Approved" indicator and forwards the electronic mail messages to the electronic mail messages addresses. The

Application Server **48** generates and returns a confirmation page to the Web Server **56** and in turn the Web Server **56** returns the confirmation page **146** to the parent's Web Browser **32**.

[0056] FIG. **18** is a flow diagram of a routine which enables a parent to forward one or more electronic mail messages from the Electronic Mail Database **52** to an authority. A parent selects one or more electronic mail message from a list of electronic mail messages **148,** clicks the forward button **150** and receives a confirmation page **152.**

[0057] FIG. **19** is a flow diagram of a routine which processes a parent's request to forward one or more electronic mail messages from the Electronic Mail Database **52** to an authority. In response to the parent's request, the parent's Web Browser **32** sends a request to the Web Server **56** and the Web Server **56** in turn forwards the request to the Application Server **48**. The Application Server **48** using the JavaMail API **54** sends the electronic mail messages **154** to the Electronic Mail Server **60** and in turn the Electronic Mail Server **60** forwards the electronic mail messages to an authority. The Application Server **48** generates and returns a confirmation page to the Web Server **56** and the Web Server **56** returns the confirmation page **156** to the parent's Web Browser **32**.

[0058] FIGS. **20A – 20C** illustrate a hierarchical data entry mechanism in one embodiment.

[0059] FIG. **20A** illustrates a web based interface which enables a parent to review, forward or delete electronic mail messages addressed to the parent's child. A parent selects a child's account to review **158,** selects "Incoming mail" **160,** selects one or more electronic mail messages addressed to the parent's child **162,** and deletes the selected electronic mail messages by clicking the "Delete selected messages" button **164,** forwards the selected electronic mail messages to the child's electronic mail account by clicking the "Forward selected messages to child's account" button **166** or sends a copy of the electronic mail messages to an authority by clicking the "Submit for investigation" button **168.**

[0060] FIG. **20B** illustrates a web based interface which enables a parent to review, forward or delete electronic mail messages sent from a child. A parent selects a child's account to review **170,** selects "Outgoing mail" **172,** and selects one or more electronic mail messages send by the parent's child **174,** the parent then deletes the selected electronic mail messages by clicking on the "Delete selected messages" button **176,** forwards the selected electronic mail messages to the messages addressees by clicking on the "Forward selected messages to addressees" button **178** or sends a copy of the electronic mail messages to an authority by clicking on the "Submit for investigation" button **180.**

[0061] FIG. **20C** illustrates a web interface to enable a child to compose and send an electronic mail message. A child using a Web Based Electronic Mail

Client adds one or more electronic mail addresses into the "To:" field of the electronic mail message **182.** If the child wishes to send a carbon copy of the electronic mail message to other individuals, the child adds one or more electronic mail addresses into the "Cc:" field of the electronic mail message **184**. If the child wishes to send a blind carbon copy of the electronic mail message to other individuals, the child adds one or more electronic mail addresses into the "Bcc:" field of the electronic mail message **186**. The child enterers a subject into the "Subject" field **188,** enters the body or content of the electronic mail message into the "Message" field **190** and clicks the send button **192.** The send button instructs the child's Web Browser **36** to send the electronic mail message to the Web Server **56** for processing.